Remarks

Applicants hereby elect Group I (claims 1-17) in response to the restriction requirement. Non-elected claims 18-23 are canceled without prejudice for filing a potential divisional application. Applicants also hereby elect O for L in formula A in response to the election of species requirement. Claims 1-17 and 32-38 read upon the elected species.

New claims 32-38 have been added.

The specification and claim 1 have been amended to correct an obvious typographical error in formula A. In particular, the alkyl group at the 17 position of the cholesterol moiety has been corrected by adding an additional $-CH_2-$ group. The structure of cholesterol is well-known (see attached Exhibit A which is an excerpt from Hawley's Condensed Chemical Dictionary). The alkyl group at the 17 position of cholesterol is –6-methylheptan-2-yl (the IUPAC name for cholesterol is (10R,13R)-10,13-dimethyl-17-(6-methylheptan-2-yl)-2,3,4,7,8,9,11,12,14,15,16,17-dodecahydro-1H-cyclopenta[a]phenanthren-3-ol). The corrected formula A depicts the correct structure for cholesterol.

It is readily apparent from the disclosure in the present application that the compounds of formula A include a cholesterol moiety. The title of the application is "**Cholesterol**-Containing Compounds and Their Use as Immunogens Against *Borrelia Burgdorferi*." Page 14, lines 2-10 describes the general synthesis of compounds of formula A. The product of that synthesis is described as "an azidoacylated **cholesterol** β-D-galactopyranoside" (page 14, lines 9-10). FIGS. 14 and 15 of the application depict the synthesis scheme of an example of a compound of formula A. The final product 19 is referred to as "**cholesteryl** palmitoyl-galactopyranoside" on page 42, line 25. And the structure of final product 19 depicts the correct structure of the cholesterol moiety.

Should there be any questions regarding this application, Examiner Qazi is invited to contact the undersigned attorney at the telephone number shown below.

Respectfully submitted,

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Hawley's

Condensed Chemical

Dictionary

THIRTEENTH EDITION

Revised by

Richard J. Lewis, Sr.

JOHN WILEY & SONS, INC.

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chlorquinaldol. (5,7-dichloro-8-hydroxyquinaldine; 5,7-dichloro-2-methyl-8-quinolinol). $CH_3C_9H_3N(OH)Cl_2$.
Properties: Yellow, crystalline powder; tasteless; pleasant medicinal odor. Mp 114C. Soluble in benzene, alcohol, chloroform; insoluble in water.
Use: Medicine (bactericide and fungicide).

chlortetracycline. (CTC; chlorotetracycline). $C_{22}H_{23}ClN_2O_8$. An antibiotic produced by growth of *Streptomyces aureofaciens* in submerged cultures. It has a wide antimicrobial spectrum, including many Gram-positive and Gram-negative bacteria, rickettsiae, and several viruses. Its chemical structure is that of a modified naphthacene molecule. Also available as the hydrochloride.
Properties: Golden-yellow crystals. Mp 168–169C. Very soluble in aqueous solutions above pH 8.5; freely soluble in the "Cellosolves" dioxane and "Carbitol"; slightly soluble in water, methanol, ethanol, butanol, acetone, ethyl acetate, and benzene; insoluble in ether and naphtha.
Derivation: By submerged aerobic fermentation, filtration, solvent extraction, and crystallization.
Use: Medicine (antibiotic), feed supplement, preservative for raw fish.

chlorthion. (generic name for *O,O*-dimethyl-*O*-(3-chloro-4-nitrophenyl)thiophosphate). A phosphoric acid ester containing chlorine.
Hazard: Toxic by inhalation and ingestion, cholinesterase inhibitor, absorbed via intact skin. Use may be restricted.
Use: Insecticide.

CHOC. Abbreviation for Center of History of Chemistry.
See Appendix II D.

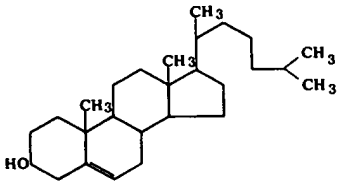
cholaic acid. See taurocholic acid.

cholecalciferol. (5,7-cholestadien-3-β-ol; 7-dehydrocholesterol; activated vitamin D_3). $C_{27}H_{44}O$. A free vitamin D_3, isolated in crystalline state from the 3,5-dinitrobenzoate, produced by irradiation, and equivalent in activity to the vitamin D_3 of tuna-liver oil.
Properties: Colorless crystals. Melting range 84–88C, specific rotation + 105–112 degrees. Unstable in light and air. Insoluble in water; soluble in alcohol, chloroform, and fatty oils.
Grade: USP, FCC.
Available forms: Hermetically sealed under nitrogen.
Use: Medicine (antirachitic vitamin).

choleic acid. A general term applied to the coordination complexes formed by deoxycholic acid (a bile acid) with fatty acids or other lipids and with a variety of other compounds including such aromatics as phenol and naphthalene. These complexes are similar to those used in separation processes such as the urea adducts for large-scale purification.
See cholic acid.

cholesteric. A molecular structure found in some liquid crystals, so called because it was first noted in cholesteryl alcohol (in 1888). It occurs in some optically active compounds and in mixtures of chiral compounds and nematic liquid crystals.

cholesterol. (cholesterin; 5-cholesten-3-β-ol).
CAS: 57-88-5. $C_{27}H_{45}OH$. The most common animal sterol, a monohydric secondary alcohol of the cyclopentenophenanthrene (4-ring fused) system, containing one double bond. It occurs in part as the free sterol and in part esterified with higher fatty acids as a lipid in human blood serum. The primary precursor in biosynthesis appears to be acetic acid or sodium acetate. Cholesterol itself in the animal system is the precursor of bile acids, steroid hormones, and provitamin D_3.



Properties: White or faintly yellow pearly granules or crystals; almost odorless. Affected by light. Mp 148.5C, bp 360C (decomposes), d 1.067 (20/4C), levorotatory, specific rotation (25C) −34 to 38 degrees. Sparingly soluble in water; moderately soluble in hot alcohol; soluble in benzene, oils, fats, and aqueous solutions of bile salts.
Occurrence: Egg yolk, liver, kidneys, saturated fats and oils. All body cells contain cholesterol produced by the liver (approximately 1000 mg a day).
Source: Prepared from beef spinal cord by petroleum ether extraction of the nonsaponifiable matter; purification by repeated bromination.
Grade: Technical, USP, SCW (standard for clinical work).
Use: Emulsifying agent in cosmetic and pharmaceutical products, source of estradiol.

cholestyramine. A synthetic anion-exchange polymer in which quaternary ammonium groups are attached to a copolymer of styrene and divinylbenzene. A white- to buff-colored powder having a particle size of 50–100 mesh, it is stable to 150C. Insoluble in water and organic solvents. It is effective in binding bile salts such as cholesterol. Research on test animals and in clinical trials on humans indicates that it is effective in eliminating from the body such toxic organochlorine compounds as "Kepone."

cholic acid.
CAS: 81-25-4. $C_{23}H_{49}O_3COOH$.